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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

KYLE, MICHAEL J

ART UNIT	PAPER NUMBER
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3676

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/832,637

Applicant(s)

GAIL ET AL.

Examiner

Michael J Kyle

Art Unit

3676

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6 is/are allowed.
- 6) ☒ Claim(s) 1-5 and 7-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werner (WO98/53229) in view of Dierker et al (U.S. Patent No. 6,471,212). With respect to claims 1 and 2, Werner discloses a brush seal comprising a bristle housing (2) including a cover plate (3) and a supporting plate (4), bristles (5), circumferential surface (9), two side surfaces (vertical portions of 3 and 4), a first positioning arrangement on a side surface (portion of 4 abutting 2), and a second positioning arrangement on a rotor (portion of 2 abutting 4). Werner fails to disclose the first and second positioning arrangements to be configured to interact with each other in a positive locking manner providing definite positioning of the bristle housing.
3. Dierker et al teaches a brush seal comprising first and second positioning arrangements (13 and 12, respectively), in order to secure the brush seal device in the housing. The first positioning arrangement is a projection and the second positioning arrangement is a recess. The structure of Dierker et al inherently prevents incorrect mounting and provides definite positioning of the entire bristle housing. The first and second positioning arrangements interact in a positive locking manner. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the first and second positioning

Art Unit: 3676

arrangements of Werner as taught by Dierker et al in order to simply and securely attached the brush seal housing to the stator.

4. With respect to claims 3-5, Werner discloses the cover plate and supporting plate are formed by non-cutting shaping and deep drawing (column 1, line 66). The bristle housing (2) is formed by flanging the cover plate and supporting plate.

5. With respect to claims 7 and 8, the combination of Werner and Dierker et al discloses the first positioning arrangement includes an integral projection (13 of Dierker et al) that projects beyond at least one side surface, and the second positioning arrangement includes a recess (12 of Dierker et al) formed in the stator. The projection is engaged in the recess. Because the projection is integral with the cover plate, it stands to reason that it is formed during the forming of the cover plate during the non-cutting shaping of the cover plate described in Werner.

6. With respect to claim 9, Werner discloses a brush seal comprising a bristle housing (2) including a cover plate (3) and a supporting plate (4), bristles (5), circumferential surface (9), two side surfaces (vertical portions of 3 and 4), a first positioning arrangement on a side surface (portion of 4 abutting 2), and a second positioning arrangement on a rotor (portion of 2 abutting 4). Werner fails to disclose the first and second positioning arrangements to be configured to interact with each other in a positive locking manner providing definite positioning of the bristle housing. Werner also fails to disclose that the first positioning arrangement includes an integral projection that is either lenticular or conical, the second positioning arrangement includes a recess, and that the integral projection is engageable in the recess.

7. Dierker et al teaches a brush seal comprising first and second positioning arrangements (13 and 12, respectively), in order to secure the brush seal device in the housing. The first

Art Unit: 3676

positioning arrangement is a projection and the second positioning arrangement is a recess. The structure of Dierker et al inherently prevents incorrect mounting and provides definite positioning of the entire bristle housing. The first and second positioning arrangements interact in a positive locking manner. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the first and second positioning arrangements of Werner as taught by Dierker et al in order to simply and securely attached the brush seal housing to the stator. Furthermore, it would be obvious to one having ordinary skill in the art to make the projection of a lenticular shape. A lenticular shape would eliminate the square corners that are found on Dierker. By eliminating corners, stress concentrations are reduced, thereby improving the durability of and increasing the work life of the piece. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the projections to be lenticular in shape, which reduces stress concentrations thereby improving the durability and work life of the piece.

8. With respect to claim 10, Werner discloses the cover plate to have a flanged section (7) and the supporting plate to have an axial section (portion of 4, below 7, extending left to right). The axial section extends beyond one of the side surfaces and is disposed at an end of the cover plate close to the circumferential surface. The flanged section encloses a free end of the axial section projecting radially beyond the free end of the axial section and forming an undercut (at 6).

9. With respect to claim 11, Werner discloses the flanged section (7) to include an inner side surface forming the undercut, the inner side surface being disposed at a distance from the side

Art Unit: 3676

surface of the supporting plate. The portion of the inner side surface that forms the under cut is at a distance from the supporting plate.

10. Claims 6, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werner in view of Dierker et al and Nakamura et al (U.S. Patent No. 6,106,190). Werner discloses a brush seal comprising a bristle housing (2) including a cover plate (3) and a supporting plate (4), bristles (5), circumferential surface (9), two side surfaces (vertical portions of 3 and 4), a first positioning arrangement on a side surface (portion of 4 abutting 2), and a second positioning arrangement on a rotor (portion of 2 abutting 4). Werner fails to disclose the first and second positioning arrangements to be configured to interact with each other in a positive locking manner providing definite positioning of the bristle housing. Werner also fails to disclose the first positioning arrangement to include a spot weld that projects beyond the circumferential surface, and the second positioning arrangement to be recess.

11. Dierker et al teaches a brush seal comprising first and second positioning arrangements (13 and 12, respectively), in order to secure the brush seal device in the housing. The first positioning arrangement is a projection and the second positioning arrangement is a recess. The structure of Dierker et al inherently prevents incorrect mounting and provides definite positioning of the entire bristle housing. The first and second positioning arrangements interact in a positive locking manner. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the first and second positioning arrangements of Werner as taught by Dierker et al in order to simply and securely attached the brush seal housing to the stator.

Art Unit: 3676

12. Nakamura teaches a projection (66b in figure 5b) on a first positioning element (66b) which fits into a recess (62b) of the second positioning element (60) to prevent the two elements from rotating with respect to one another. Nakamura et al further discloses an embodiment having a welded projection (W in figure 6b) that serves the same purpose as the projection in figure 5b. The projection (W), formed during a non-cutting shaping process also projects beyond one side surface and is lenticular in shape as claimed. Both projections function to prevent the first positioning arrangement, or the projection, from rotating with respect to the second positioning arrangement (60). Inasmuch as the references disclose these elements as art recognized equivalents, it would have been obvious to one of ordinary skill in the art to substitute one for the other. In re Fout, 675 F.2d 297, 301, 213 USPQ 532, 536 (CCPA 1982). One skilled in the art would incorporate such projections with the motivation to prevent the first positioning element from rotating with respect to the second positioning element.

13. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Werner in view of Deirker et al as applied to claim 1 above, and further in view of Reisinger et al (U.S. Patent No. 5,066,024). Werner and Dierker et al fail to disclose the fastening methods as claimed. Reisinger teaches a pair of holes (7 and corresponding holes in the housing) configured to receive a fastener for the purpose of providing a simple and detachable connection while still maintaining the operability of the seal (column 1, line 60). It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate holes and

Art Unit: 3676

fasteners to Werner's invention for the purpose of providing a simple and detachable connection to other components.

14. Claim 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Werner in view of Dierker et al as applied to claim 1 above, and further in view of Hanrahan (U.S. Patent No. 5,066,025). The combination of Werner and Dierker et al fails to disclose angled bristles. Hanrahan teaches that it is known in the art that bristles are usually located at an angle with respect to the radius for the purpose of maintaining proper sliding relationship with the rotor (column 1, lines 21-28). Where the range of article sizes disclosed in the prior art envelops the recited range, and there is no showing of criticality of the recited range, such recited range would have been obvious to one of ordinary skill in the art. In re Reven, 390 F.2d 997, 156, USPQ 679 (CCPA 1968).

Response to Arguments

15. Applicant's arguments with respect to claim 1-5 and 7-11 have been considered but are moot in view of the new ground(s) of rejection. These claims now stand rejected under 103(a) as being unpatentable over Werner in view of Dierker et al. Dierker et al teaches first and second arrangements that hold the entire housing in place, as discussed above.

16. With respect to claims 12-14, applicant argues that neither Hanrahan nor Reisinger cure the critical deficiencies of the combination used to reject the independent claim. However, the independent claim 1, is now rejected under 103(a) as being unpatentable over Werner in view of Dierker et al.

Art Unit: 3676

17. With respect to claims 6, 8 and 9, applicant argues that the Nakamura reference fails to teach first and second positioning arrangements configured to interact with each other in a positive locking manner and to provide definite positioning of a bristle housing so as to prevent relative rotation and incorrect mounting of the entire bristle housing. Examiner notes that the combination of Werner and Dierker et al discloses first and second positioning arrangements configured to interact with each other in a positive locking manner and provided definite positioning of a bristle housing so as to prevent relative rotation and incorrect mounting. Nakamura et al is cited to teach that a weld extending beyond the circumference of an inner piece can positively lock in a groove of an outer piece to prevent relative rotation.

Conclusion

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J Kyle whose telephone number is 703-305-3614. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Knight can be reached on 703-308-3179. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

20. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-2168.

mk



Anthony Knight
Supervisory Patent Examiner
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